Attachment E – Additional Information (Section F.10)

HYDROTESTING DISCHARGE CALCULATIONS
Kaipapa'u Stream Bridge Replacement (Project No. BR-083-1(48))
Department of Transportation, State of Hawai'i
Hau'ula, O'ahu, Hawai'i

PURPOSE:

The purpose of these calculations is to estimate the magnitude of discharges that will occur during hydrotesting of the proposed water lines.

OVERVIEW OF HYDROTESTING PROCESS FOR WATER LINES

The typical hydrotesting process will consist of 6 steps: (1) hydrostatic pressure testing; (2) preliminary flushing; (3) initial chlorination; (4) secondary flushing; (5) secondary chlorination; and (6) final flushing and zeroing down. Discharge will occur during flushing. A total turnover of approximately 10 volumes will take place during the water line testing operation.

VOLUME CALCULATIONS

Pipe Volume = πr^2 x Length(in.) / (231 cubic in./gal.)

Diameter (inch)	Length (linear feet)	Length (linear inch)	Volume (cubic inch)	Volume (Gallons)
12	400.00	4,800.00	542,867.21	2,350.07
16	400.00	4,800.00	965,097.26	4,177.91
Total	800.00		Total	6,527.98

Total x 10 (TOs)	**65,279.85**	***Per Installation***
	x 2	
Project will require two installations (temporary & permanent alignments)	**130,559.69**	

RATE AND TIME OF DISCHARGE

Discharge rate is based on rate of flow through a standard 4-inch stubout at 600 gpm or 1.34 cfs.

Time of Discharge Calculation

Total Discharge Volume =	130,559.69	Gallons
Divided by 600 Gallons per Minute =	217.60	Minutes to Discharge
Divided by 60 Minutes per Hour =	3.63	Approximate Hours to Discharge
Divided by 6 Hours per Day =	0.60	Days to Complete Hydrotesting
Gallons per Day Flow Rate =	216,000.00	Gallons per Day

***Note: The hydrotesting calculations are conservative*